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Fine Needle Aspiration Cytology Versus Incisional Biopsy in Breast Carcinoma

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Introduction

Mammary glands or breasts are distinguishing features of mammals from puberty to death. The breast plays constant physical and physiological role in women's life, related to important life events such as menses, pregnancy, gestation, lactation and menopause. This is unique because its development and growth is under constant control of numerous hormones.

Currently accurate diagnosis of breast lesions depends on a "Triple Assessment Approach" comprising clinical, imaging and pathological examination, for the pathological assessment of breast lumps Fine Needle Aspiration Cytology and incisional biopsy are considered.

Materials and Method

This is a random prospective study of 50 cases of female patients presenting with complaint of breast lumps alone or associated with other symptoms suspicious of malignancy of breast to the hospital during the period of 2011 to 2013 was carried out.

Clearance from Institutional Ethical Committee was taken for conducting the study.

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After taking informed consent the patients were methodically evaluated for assessment of breast lump by history, physical examination which was supplemented with biochemical and radiological or imaging examination.

Following clinical and radiological work-up the patients were subjected to Fine Needle Aspiration Cytology. The patients who were found to have malignant cytology on Fine Needle Aspiration Cytology were only considered for the study and subject to Incisional/Excisional biopsy.

The findings of Incisional/Excisional biopsy were then compared with the findings of Fine Needle Aspiration Cytology to find out the specificity of Fine Needle Aspiration Cytology.

Results

On collecting and analyzing the data of 50 patients in breast, following observation is found.

Disease	Diagnosis on Incisional/ Excisional Biopsy	Percentage
Benign	06	12
Malignant	44	88
Total	40	100

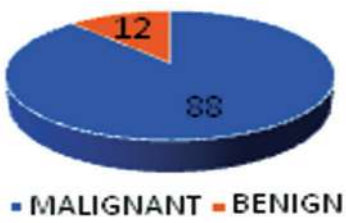

Fig. 1: Beningn and Malignant Findings on Incisional Biopsy of All Fine Needle Aspiration Cytology Proven Malignant Cases.

- Hence out of the 50 fine needle aspiration cytology proven malignant cases which were subject to incisional/excisional biopsy 6 cases are found to be benign and 44 cases to be malignant.

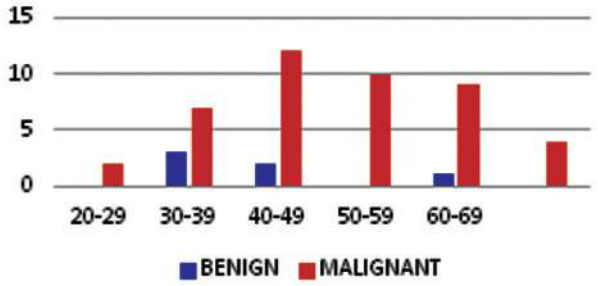

Fig. 2: Age Incidence of Benign & Malignant Breast Lump According to Incisional Biopsy In Present Study.

Age	No. of Cases		Percentage	
	Benign	Malignant	Benign	Malignant
20-29	0	2	0	4
30-39	3	7	6	14
40-49	2	12	4	24
50-59	0	10	0	20
60-69	1	9	2	18
70 and 70 Above	0	4	0	8
Total	6	44	12	88

- Maximum incidence of benign breast disease is seen in the age groups of 30 to 39 years while maximum incidence of malignant breast disease is seen in the age group of 40-49 years.

Discussion

- The present study was conducted on 50 female patients having a palpable breast lump with clinical diagnosis of malignancy, each of whom underwent a Fine Needle Aspiration Cytology of the lump, followed by Incision/ Excision biopsy. Only those cases which had Fine Needle Aspiration Cytology proven malignancy were considered and subject to Incisional/Excisional Biopsy. The Fine Needle Aspiration Cytology findings were then matched with the histology report of the Incision/Excision Biopsy to see as to how accurate Fine Needle Aspiration Cytology was.
- In the 50 consecutive women in this study, the age ranged from 20 to 70 years. The maximum (14 patients) was found in the age group of 40 to 49 years, followed by 10 patients in the age group of 30 to 39 years, 50-59 years and 60-69 years each.
- In study done by Nasir Malik M. A. et al 40 on 954 patients, malignant more commonly found in 40 to 60 years of age group. Similar study done by Kassim Fawzi Abdelkarim et al 41 showed similar age patterns.
- In study done by R. S. Jr et al 42, breast cancer is the most common form of cancer in women between the age group of 40 to 44 years.
- In this study, maximum patients (26 patients) with lump in the breast with Fine Needle Aspiration Cytology proven malignancy had age of menarche around 13 years.
- In this study the right breast was involved in 27 patients, while the left breast was involved in 23 patients.
- The upper & outer quadrant was the commonest site of the lump in this study & that was in maximum (32) patients, while the lower outer quadrant was involved in 6 patients, the upper inner quadrant in 10 patients & the lower inner quadrant in 1 patient. There was 1 patient who had lump in a central quadrant.
- In a similar study was done Khemka et al[43], the maximum number of lumps in one particular quadrant was in the upper & outer quadrant, which was in 16 out of 50 patients. So, the quadrant in which there was the maximum number of palpable lumps was the outer & upper quadrant.
- Lymph node involvement of the axillary group was studied in present study & it was found that 31 cases had enlarged ipsilateral axillary lymph nodes.
- As mentioned above, the primary aim of this study was to assess how accurate & reliable was Fine Needle Aspiration Cytology in diagnosing breast pathology which could help in proceeding towards definitive

excisional & often mutilating surgery without having an unpleasant surprise at the final histology report of the specimen.

- In this study incisional biopsy finding for benign lesions sensitivity is 100.00%, specificity is 95.55%, accuracy is 96.55%, positive predictive value is 87.50% & negative predictive value is 100.00%. On the other hand, incisional biopsy finding for malignant breast lesions, sensitivity is 100.00%, accuracy is 96.55%, positive predictive value 100.00% and negative predictive value is 100.00%.
- According to Pinder S. E. Et al. The efficacy of Fine Needle Aspiration Cytology relies heavily on the experience of both the aspirator and the pathologist and regular audit shows that the most experienced aspirators have the highest success rate & low number of technically poor specimens; the inadequate rate can range from 9.8% to 45.9% from single experienced aspirators to inexperienced group of aspirators. Other factors that influence the success rate of Fine Needle Aspiration Cytology is the size & cellularity of lesion, but by adopting the triple approach to diagnosis the sensitivity & specificity of Fine Needle Aspiration Cytology can be extremely high. The sensitivity ranges from 75-96% and the specificity approaches 100% in most series and false positives are extremely rare.
- The 1 false patient occurred in lactating women.
- According to Heber AK we had accuracy of 100% for benign lesion and 93.10% for malignant lesion with false negative rate of 6.9% and false positive rate of zero with fine needle aspiration cytology in the diagnosis of palpable breast lesion.
- Apart from high sensitivity rate of fine needle aspiration cytology, this technique is quite attractive because of easy execution and interpretation, its low cost and its low rate of morbidity.
- Some raise risk of implantation of cells from needle aspiration but these largely resulted from use of larger cutting needle (18 gauge) rather than fine needle (22 gauge).
- The use of fine needle aspiration cytology as main and direct indicator for mastectomy (without the need for biopsy) remains controversial.
- The major danger is for false positive diagnosis, leading to unwarranted mastectomy.
- Fine needle aspiration cytology is highly pathologist dependent. An expert pathologist is required to stamp or confirm the diagnosis of breast carcinoma on fine needle aspiration cytology. The danger of misdiagnosis is studiously avoided by maintaining a cautious and a conservative threshold for diagnosis a cancer. The results depends upon pathologists and histological findings.
- Any questionable diagnosis that is stated to be suspicious, an open biopsy is suggested where in centers an intraoperative frozen section is not available.

Conclusion

- The fine needle aspiration cytology is an important diagnostic adjuvant in the management of a patient with breast lump. Recently fine needle aspiration cytology has become very popular technique utilized in the diagnosis of palpable breast masses, owing to its distinct advantage of being sensitive, specific, economical and safe. It greatly compliments the clinical and radiographic examination and permit rapid diagnosis. Thus, it is commonly used as a part of triad in the case of breast lump, which in addition to fine needle aspiration cytology includes clinical breast examination and mammography.
- In this study 50 cases were included during period of 2 years from 2011 to 2013. A prospective study of 50 cases of patients presenting with complains of breast lumps alone or associated with other symptoms coming to hospital is carried out.
- 50 cases having lump in breast clinically suspicious of malignancy were studied.
- 28% cases were involved in 40-49 age group.
- All cases presented with complain of breast lump (100%)
- Axillary lymph nodes involvement was seen in 31 cases.
- Out of 50 cases which were diagnosed as malignant on fine needle aspiration cytology, 44 were confirmed as malignant on histopathological examination by incisional/ excisional biopsy.
- Out of 50 cases diagnosed as malignant by fine needle aspiration cytology, 6 cases were confirmed as benign on histopathological findings of incisional/excisional biopsy.

- Hence from our study data and its comparison with other statistics we can say fine needle aspiration cytology is a patient friendly, easy, reliable, and simple diagnostic test. When performed by an expert surgeon, the diagnostic accuracy of fine needle aspiration cytology is high. Others factors that influences the success rate of fine needle aspiration cytology is the size and cellularity of lesion, but by adopting the triple approach to diagnosis the sensitivity and specificity of fine needle aspiration cytology can be extremely high.
- As in this study 6 cases were false positive, thus we conclude that fine needle aspiration cytology is highly predictive but it lacks reliability and without having a confirmed tissue diagnosis by Incisional/Excisional biopsy the patient may be subject to unnecessary surgical intervention and scary findings of a benign histopathological finding on surgically excised specimen.
- Thus, we have no hesitation in concluding that fine needle aspiration cytology is a very useful investigation but incisional biopsy is a very important preliminary diagnostic test in palpable breast lumps before proceeding for any further intervention or management.

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